On Topological Methods of the Function Theory and Some Applications to the Reversion of Boundary Value Problems

SOV/140-59-3-10/22

distinguished. The results partially are collected in 4 long tables. The author mentions I.M.Mel'nik. He thanks F.D.Gakhov for directing this work.
There are 4 tables, and 4 references, 3 of which are Soviet, and 1 English.

ASSOCIATION: Rostovskiy gosudarstvennyy universitet (Rostov State University)

SUBMITTED: March 27, 1958

Card 2/2

YESAULENKO, Konstantin Yevgen'yevich, deputat Verkhovnogo Soveta RSFSR; KOLOMYTSEVA, O.I., red.; KLYUCHEVA, T.D., tekhn.red.; YELAGIN, A.S., tekhn.red.

[The Kamchatka territory is rich and beautiful] Bogat i krasiv Kamchatskii krai. Moskva, Izd-vo "Sovetskaia Rossiia," 1962. 126 p. (MIRA 15:5)

1. Predsedatel' Kamchatskogo oblastnogo Soveta deputatov trudyashchikhsya (for Yesaulenko).
(Kamchatka—Economic geography)

SUDZHAYEVA, E.A.; KOLOMIYTSEVA, O.I., red.; YELAGIN, A.S., tekhn. red.

[What a cultural center can do for a rural club] Dom kul'tury - sel'skomu klubu. Moskva, Sovetskaia Rossia, 1964. 107 p. (Bibliotechka v pomoshch' sel'skomu klubnomu rabotniku, no.4) (MIRA 17:4)

NOGACH, Zdenek [Nohac, Zdenek], zhurnalist; OBORSKIY, Stanislav [Oborsky, Stanislav], zhurnalist; KOLOMIYTSEVA, O.I., red.; MEDVEDEVA, R.A., tekhn. red.

[Where the taiga was at one time...]Gde ran'she byla taiga. Moskva, Izd-vo "Sovetskaia Rossiia," 1962. 357 p. Translated from the Czech. (MIRA 15:11)
(Siberia--Description and travel)

VOROB'YEV, V.F.; KOLOMIYTSEVA, O.I., red.

[Electrification in socialist agriculture] Elektrifikatsiia sotsialisticheskogo sel'skogo khoziaistva. Moskva, Gos-kul'tprosvetizdat, 1954. 55 p. (MIRA 16:9)
(Electricity in agriculture)

KAMANKIN, Valentin Petrovich; KOLOMIYTSEVA, O.I., red.; MARAKASOVA, V.V., tekhn. red.

[Automation and labor productivity] Avtomatizatsiia i proizvoditel'nost' truda. Moskva, Izd-vo "Sovetskaia Rossiia," 1963. 142 p. (MIRA 16:6)
(Automation—Economic aspects)

NOGACH, Zdenek [Nohac, Zdenek], zhurnalist; OBORSKIY, Stanislav, zhurnalist; MOSKOVSKAYA, L.V.[translator]; KOLOMIYTSEVA, O.I., red.

[Trains are headed east] Poezda idut na Vostok. Moskva, Sovetskaia Rossiia, 1964. 283 p. (MIRA 18:2)

KOLOMIYTSOV, M.D.

Investigating the mechanical characteristics of electric motors on cutting machines. Zap.Len.gor.inst. 35 no.1:36-47 '57. (MIRA 10:10)
(Mining machinery--Electric driving) (Electric motors, Induction)

KOLOMIYTSOV, M.D., dots.

Investigating the parameters of pneumatic hammer plate valves.
Izv. vys. ucheb. zav.; gor. zhur. no.2:85-94 '58. (MIRA 11:5)

1. Leningradskiy gornyy institut.
(Pneumatic tools) (Valves)

KOLOMIYTSOV, M.D., dots. kand. tekhn. nauk.

Analyzing the performance of pneumatic hammer valves. Nauch. dokl. vys. shkoly; gor. delo no.2:241-245 '58. (MIRA 11:6)

1. Predstavlena kafedroy gornykh mashin Leningradskogo gornogo instituta im. G.V. Plekhanova.
(Mining machinery--Pneumatic driving)

BOBROV, I.F.; KOLOMIYTSOV, M.D.; MAKHNO, Ye.Ya.; YUDIN, R.E.

Hydromechanical mining of thin steeply dipping coal seams. Ugol' Ukr. 6 no.11:14-15 N '62. (MIRA 15:12)

1. Leningradskiy gornyy institut.
(Donets Basin--Hydraulic mining)

SHIFRIN, K.S.; KOLOMIYTSOV, V.Yu.; PYATOVSKAYA, N.P.

Use of artificial earth satellites in determining the flux of leaving short-wave radiation. Trudy GGO no.166:24-54 '64.
(MIRA 17:11)

KOLOMIYTSOV, Yuriy Viktorovich; DUKHOPEL, Ivan Ivanovich; TNYUSHIN, Aleksey Ivanovich; ARTEM'YEV, Igor' Vasil'yevich; YAKUSHEV, A.I., doktor tekhn. nauk, prof., retsenzent; GORDON, G.G., inzh., red.

[Optical instruments for measuring linear and angular dimensions in the manufacture of machinery; a reference book] Opticheskie pribory dlia izmereniia lineinykh i uglovykh velichin v mashinostroenii; spravochnaia kniga. Moskva, Mashinostroenie, 1964. 254 p. (MIRA 17:10)

KOLOMIYTSEV, Yu.V.

USSR/ Engineering - Machine tools

Card 1/1 Pub. 103 - 8/20

Authors : Kolomiytsev, Yu. V.

Title : Contactless interference indicator

Periodical : Stan. i instr. 26/3, 25-27, Mar 1955

Abstract : The introduction into industry of a new type of contactless interference indicator is announced. The optical characteristics and mode of operation of the device are described. The various applications of the indicator in the machine construction industry are listed. The main advantages of the new device is its high sensitivity to surface smoothness of machined parts and the fact that it does not scratch the measured surfaces. Two USSR references (1938 and 1940). Drawings; illustration.

Institution : .....

Submitted : .....

KOLOMIYTSOV, Yu.V.

Contactless optical profilometer. Izm.tekh. no.1:56-62 Ja-F '56.
(MLRA 9:5)

(Surfaces (Technology)--Measurement) (Interferometer)

KOLOMIYTSOV, Yu.V.; DUKHOPEL, I.I.

Contactless interference technique for checking spherical lens surfaces. Opt.i spektr.1 no.1:94-101 My '56. (MLRA 9:11)
(Lenses--Measurement)

DENISYUK, Yu.N.

Wave representations in the theory of interferometers. Opt. spektr. 1 no.7:937-950 D '56. (MLRA 9:12)
(Interferometry)

Abs Jour : Referat Zhur - Fizika, No 5, 1957, No 10795

scheme, which facilitates considerably the production of a large magnification of the examined portion of the surface. In addition, this scheme makes it possible to control not only external surfaces, but also internal ones (with diameter not less than 8.5 mm). The micro-profilometer has an unusual construction (proposed by B. M. Levin), insuring the production of an interference pattern that is quite stable with respect to impact.

KOLOMIYTSOV, Yu.V.; INYUSHIN, A.I.; BAYBAZAROV, A.A.

Noncontact optical micrometer. Izm. tekh. no.2:25-29 Mr-Ap '57.
(Micrometer) (MLRA 10:6)

AUTHOR: Kolomiytsov, Yu. V. SOV-115-58-3-14/41

TITLE: The Interference Method for Checking the Waviness of the Surface of Balls (Interferentsionnyy metod kontrolya volnistosti poverkhnosti sharikov.)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 3, pp 43 - 45 (USSR)

ABSTRACT: The described interferometer and method permit a visual check of the ball bearing surface for geometric accuracy. The interferometer, suitable for measuring the localized shape deviations with an accuracy of 0.03-0.1 micron on bearing of 1 to 15 mm, is similar in principle to that of the Twyman interferometer [Ref.2,3] and differs from it by a flat mirror in one branch replaced by an objective and a spherical mirror. The local unevenness of ball surface is revealed by the curving in the straight interference lines.

Card 1/2

The Interference Method for Checking the Waviness of the Surface of Balls

The experimental unit of the device has a ratio of the objective diameter to the focal distance 1 : 1.5, while the diameter of the checked ball surface is equal to 0.33 of the ball diameter. There are 2 figures and 4 references, 2 of which are Soviet and 2 English.

1. Surfaces--Inspection 2. Interferometers--Applications
3. Ball bearings--Inspection

Card 2/2

KOLOMIYTSOV, Yu.V.

Comparison of the Rayleigh and Jamin types of interferometers. Opt. i spektr. 8 no.5:702-712 My '60. (MIRA 13:9)
(Interferometer)

S/115/60/000/011/004/013
B019/B058

AUTHORS: Kolomiytsov, Yu. V., Panaiotova, N. N., and Smirnova, G. G.

TITLE: Collimation Method for Controlling Grooves in Ball Bearing Races

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 11, pp. 16 - 18

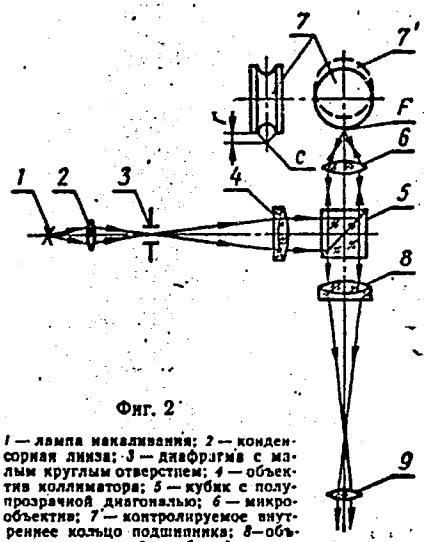
TEXT: The optical method described here permits the high-precision measurement of the curvature radius of toric faces. The ray path in the instrument is shown in Fig. 2. In its focal point the objective 6 produces an image of orifice 3. If the race is moved along the optical axis in such a way that the focal point of the objective lies once on the groove surface, the second time in the curvature center of the groove, an image of the orifice can be seen in the first case, and a very narrow luminous band in the second case. The curvature radius of the groove can thus be ascertained by determining the distance between the two race positions. An estimation of the surface quality of the groove from the width of the band is not suitable owing to the high quality of the groove surface. Local deviations of the groove shape can be easily proved. An aperture of

Card 1/2

Collimation Method for Controlling Grooves in Ball Bearing Races

S/115/60/000/011/004/013
B019/B058

A = 0.75 is considered most suitable by the authors. There are 2 figures and 1 table.



Фиг. 2

1 — лампа накаливания; 2 — конденсорная линза; 3 — диафрагма с малым круглым отверстием; 4 — объектив коллиматора; 5 — кубик с полупрозрачной диагональю; 6 — микрообъектив; 7 — контролируемое внутреннее кольцо подшипника; 8 — объектив зрительной трубы; 9 — окуляр

Legend to Fig. 2:
1) bulb,
2) condenser,
3) diaphragm,
4) objective collimator,
5) prism,
6) microobjective,
7) ball bearing race,
8) eyepiece tube,
9) eyepiece.

Card 2/2

KOLOMIYTSOV

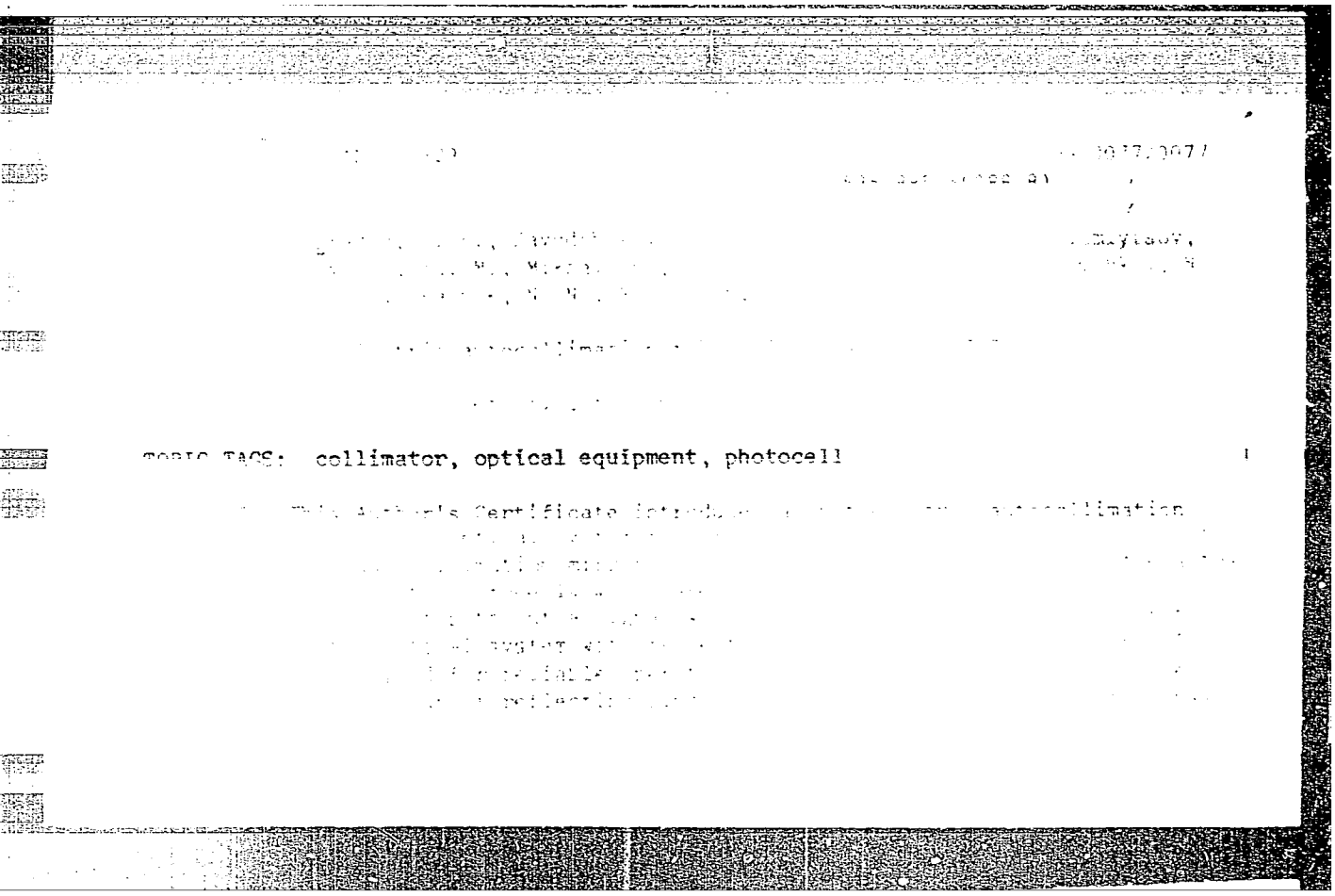
[redacted]ov, Yu. V.; YEGUDKIN, A. S.

The IZK-57 interferometer for measuring ball diameters. Izm. tekh. no.10:8-11 O '62. (MIRA 15:10)

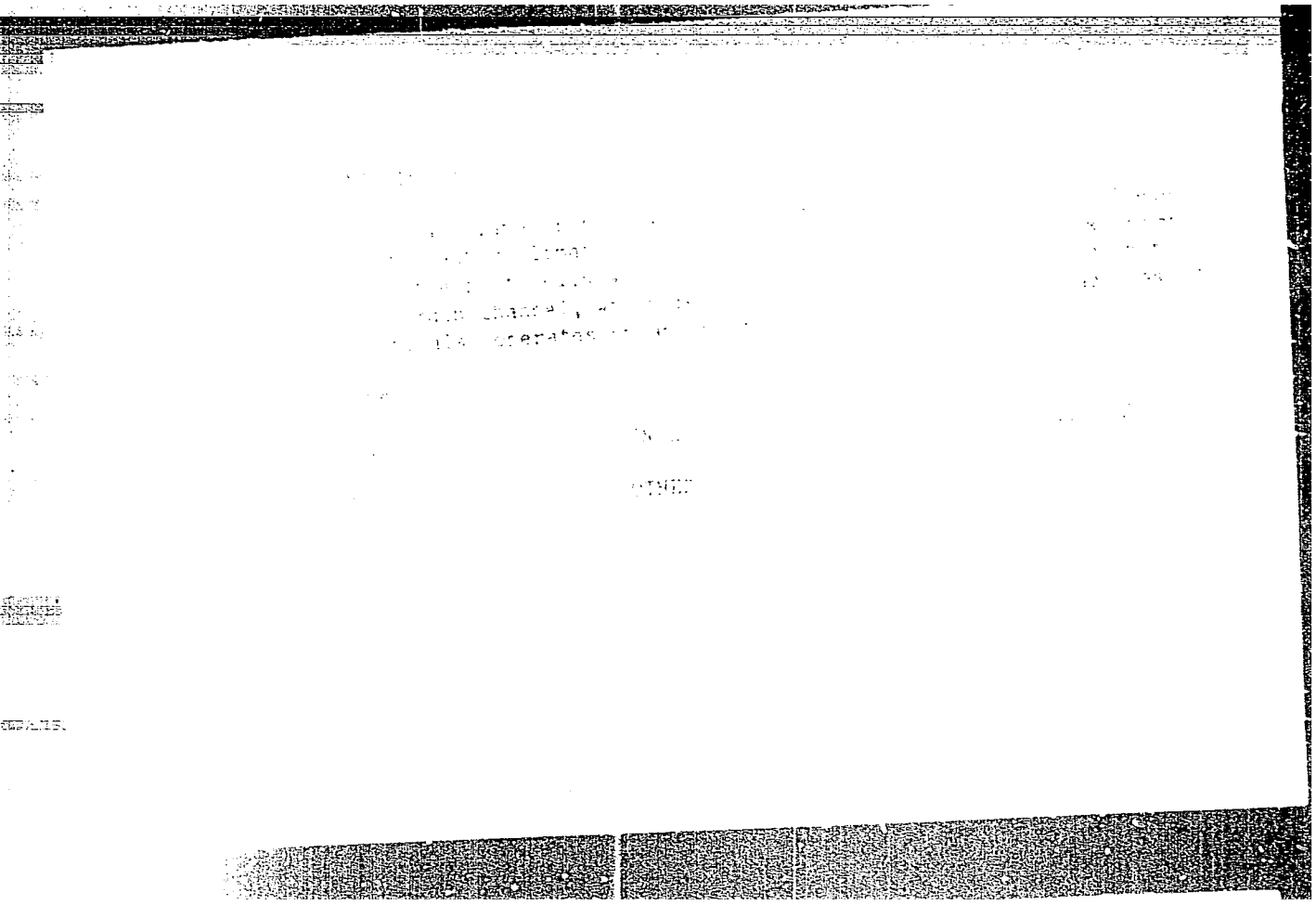
(Interferometer)

KARTASHEV, Arseniy Ivanovich; KOLOMIYTSOV, Yu.V., kand. fiz.-mat. nauk, red.; RYSKO, S.Ya., red.

[Surface roughness and methods for its measurement] Sherokhovatost' poverkhnosti i metody ee izmereniia. Moskva Izd-vo Standartov, 1964. 163 p. (MIRA 17:8)



TOPIC TAGS: collimator, optical equipment, photocell



KROTKINA, N.A.; KOLOMKAROV, G.I. [deceased]

Further observations of the influence of mechanical factors on the development of precancer states of the stomach in rats. Trudy Inst. onk. AMN SSSR no.3: 190-200 '60 (MIRA 16:12)

1. Laboratoriya opukholevykh shtammov (zav. - prof. N.A. Krotkina) Instituta onkologii AMN SSSR.

KOLOMNETS, T.A.

"The Vegetative Restoration of Red Clover." Cand Biol Sci, All-Union Inst of Plant Growing, All-Union Order of Lenin Acad Agricultural Sci imeni V. I. Lenin, Leningrad, 1955. (KL, No 9, Feb 55)

SO: Sum. No. 631, 26 Aug 55- Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

ACC NR: AP7011354 SOURCE CODE: UR/0062/66/000/011/2041/2042

AUTHOR: Vol'pin, M. Ya.; Kolomnikov, I. S.

ORG: Institute of Heteroorganic Compounds, Academy of Sciences USSR (Institut elementoorganicheskikh soyedinenly AN SSSR)

TITLE: Complex of zero-valent cobalt with triethylphosphite

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1966, 2041-2042

TOPIC TAGS: cobalt compound, phosphate ester, electron paramagnetic resonance

SUB CODE: 07

ABSTRACT: In an earlier report, the production of phosphite complexes of univalent cobalt L_4CoCl and L_3CoCl, where $L = (C_2H_5O)_3P$, was announced. Under homogeneous conditions, these complexes were found to absorb molecular hydrogen, yielding a complex of zero-valent cobalt, with the composition L_4Co -- the first representative of complexes of zero-valent cobalt with phosphorus ligands. This complex was found to be a white crystalline substance, stable in air for several hours. Electron paramagnetic resonance studies indicated that the complex exists in dimer form. The absence of a Co-H bond was demonstrated by a study of the infrared spectrum and by reactions with iodine and carbon tetrachloride. The authors thank V. I. Belovaya,

UDC: 541.49:661.718.1:546.73

0931 1733

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823920010-6"

ACC NR: AP7011354

of the Institute of Inorganic Chemistry, AN SSSR, for measuring the magnetic susceptibility, and V. I. Sheychenko, of the Institute of Natural Compounds, AN SSSR, for taking the spectrums of the YaMR. Orig. art. has: 1 formula.

[JPRS: 40,351]

Card 2/2

S/062/63/000/001/025/025
B101/B186

AUTHORS: Nesmeyanov, A. N., Anisimov, K. N., Kolobova, N. Ye., and Kolomnikov, I. S.

TITLE: Manganese rhenium decacarbonyl $(CO)_5Mn\text{-}Re(CO)_5$

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 1, 1963, 194

TEXT: Reaction of sodium pentacarbonyl manganese with rhenium pentacarbonyl chloride, or of sodium pentacarbonyl rhenium with manganese pentacarbonyl bromide, in tetrahydrofuran produced the hitherto unknown manganese rhenium decacarbonyl with 60% yield in the form of lemon-yellow crystals, stable in air, m.p. 167°C, readily sublimable in vacuo, and readily soluble in organic solvents. The solutions decompose in air. The Mn-Re distance was found to be 2.96 ± 0.01 Å.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

Card 1/2

S/062/63/000/001/025/025
B101/B186

Manganese rhenium ...

SUBMITTED: November 30, 1962

Card 2/2

L 11126-63 EWA(k)/EWT(1)/FBD/BDS/T-2/3W2/EEC(b)-2/ES(t)-2 ASD/AFFTC/
ESD-3/RADC/APGC/AFWL P1-4/Po-4 JHB/WG/K/EH/IJP(C) S/0288/63/000/001/0117/0118 87
ACCESSION NR: AP3000270 8/

AUTHOR: Kolomnikov, Yu. D.; Krivoshchekov, G. V.; Troitskiy, Yu. V.; Chebotayev, V. P.

TITLE: Some characteristics of a gas-discharge laser 45

SOURCE: AN SSSR. Sibirsk. otd. Izv., no. 2. Ser. tekh. nauk, no. 1, 1963, 117-118

TOPIC TAGS: gas-discharge laser, helium-neon laser

ABSTRACT: A conventional helium-neon gas-discharge laser has been built and tested. The device uses molybdenum-glass or pyrex tubes 90 cm long and 1.6 to 1.9 cm in inner diameter and mirrors coated with 15 alternating layers of magnesium fluoride and zinc sulfide. One of the mirrors is fixed, while the other can be moved by micrometer screws around two mutually perpendicular axes. A 50-w rf discharge was used to pump the laser. Oscillation was observed at 1.153 μ; a weaker oscillation was observed at 1.162 μ. The laser was tested at various pressures and gas ratios. It was found that addition of a small amount of argon decreased the power output. In addition to an He-Ne mixture,

Card 1/2

L 11126-63
ACCESSION NR: AP3000270

6

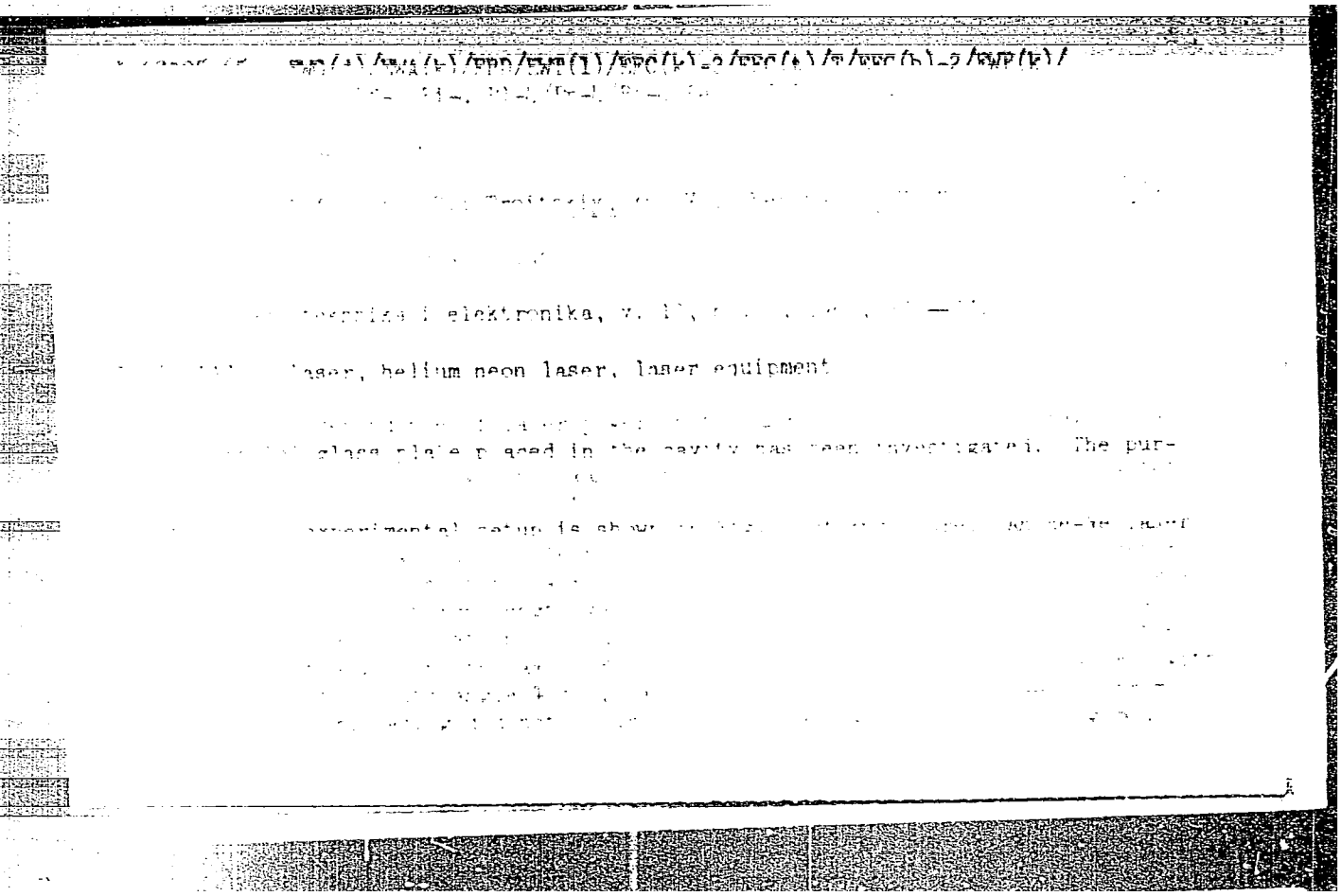
pure neon was lased at pressures from 7 x 10^{-3} to 4 x 10^{-2} mm Hg at the 1.153-μ wavelength with a power output 20—30 times less than that produced by the mixture. "The authors express their thanks to colleagues of the laboratory taking part in the work: M. F. Kryukshtal', V. V. Peshetnikov, and I. F. Burmatov. The authors also thank V. K. Solov'yev and V. A. Lazarev, participants in the manufacture of the interference mirrors." Orig. art. has: 2 figures.

ASSOCIATION: Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR, Novosibirsk (Institute of Radiophysics and Electronics, Siberian Department, AN SSSR)

SUBMITTED: 16Nov62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH, SD NO REF SOV: 001 OTHER: 002

kes/ik
Card 2/2



elektronika, v. 1

laser, helium neon laser, laser equipment

glass plate placed in the cavity has been investigated. The pur-

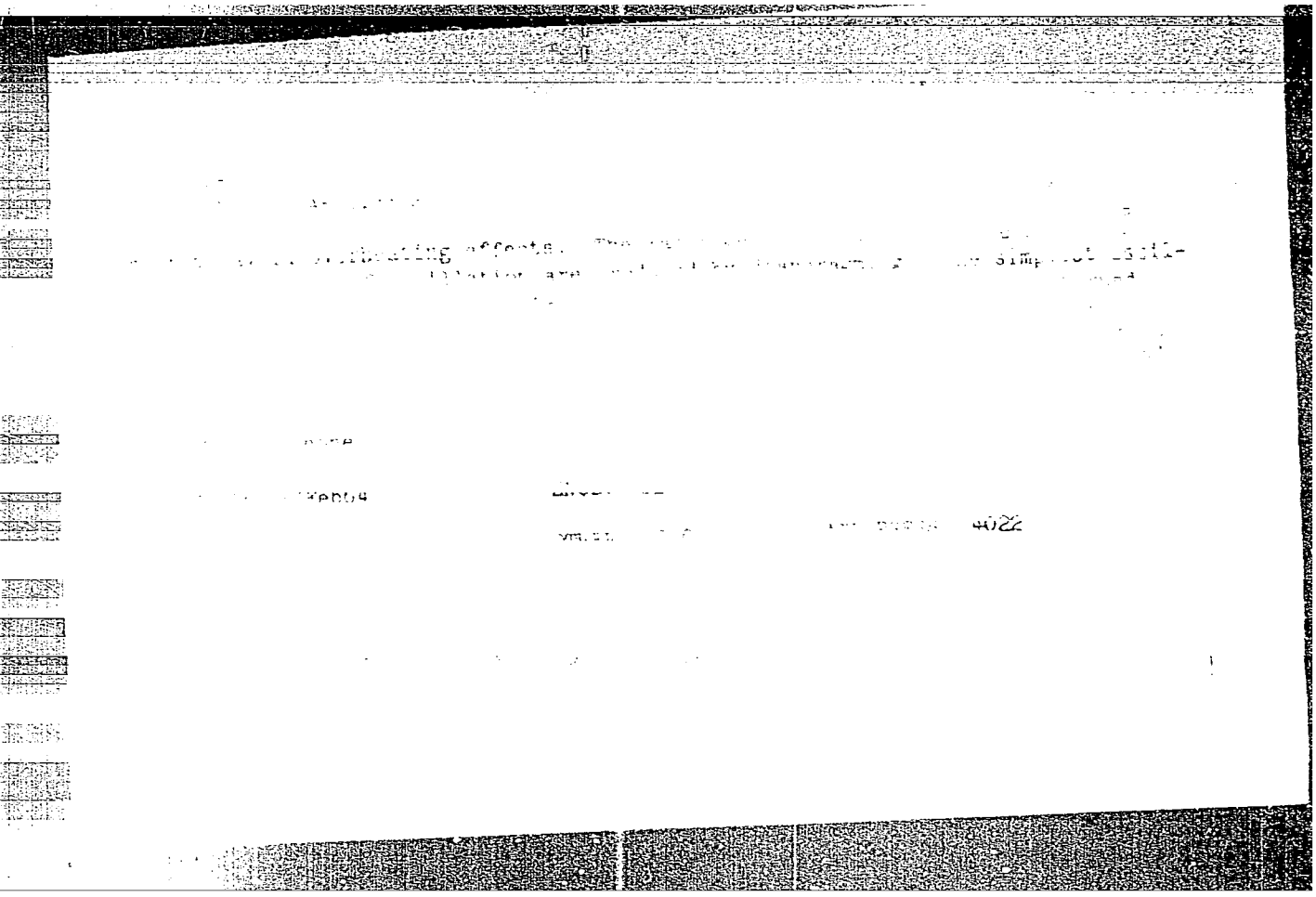
experimental setup is shown

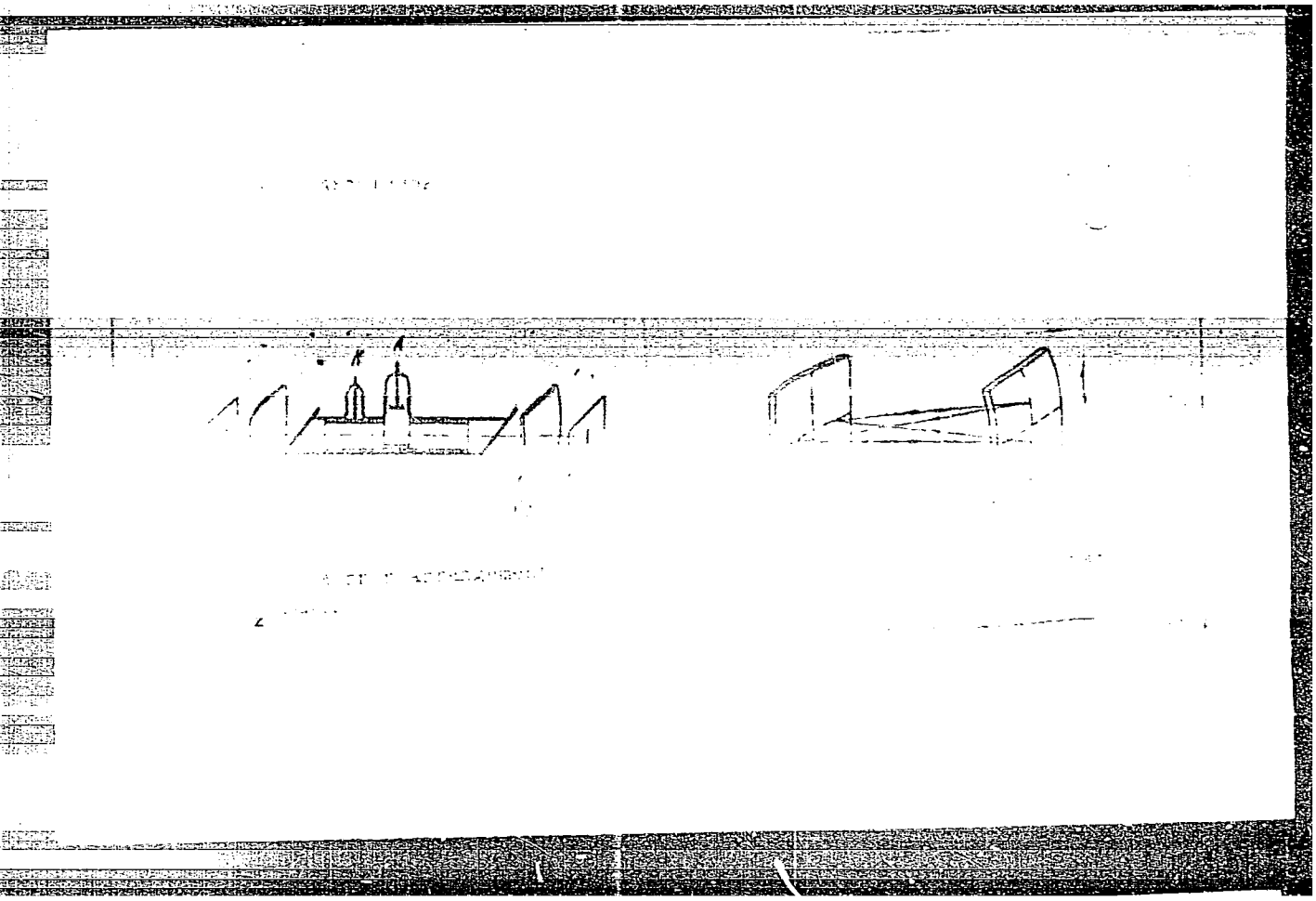
[redacted] at successively closer spacing and declining power. For a plate

[redacted] 13Aug63 ENCLOSURE: 02

NO REF GOV: 001 OTHER: 001

[redacted] hydrogen laser, cylindrical mirror, hollow cathode discharge,





L 4214-66 EWA(h)/FBD/EWT(l)/EWT(m)/EWP(c)/EEC(k)-2/T/EWP(t)/EWP(b)/EWA(m)-2/EWA(h)/
ACC NR: AP5027037 EWP(k) SCTB/IJP(c) SOURCE CODE: UR/0120/65/000/005/0210/0211
WG/JD 44

AUTHOR: Klement'yev, V. M.; Kolomnikov, Yu. D. 44 53 B

ORG: Institute of Semiconductor Physics, SO AN SSSR, Novosibirsk (Institut fiziki poluprovodnikov SO AN SSSR) 44

TITLE: Optical resonator with variable-curvature cylindrical mirrors

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1965, 210-211

TOPIC TAGS: gas laser, helium neon laser, resonator, resonator mirror, cylindrical mirror 25,44 27

ABSTRACT: A helium-neon laser resonator with variable-curvature cylindrical mirrors is described. A special device for bending 1-mm-thick glass plates is shown in Fig. 1.

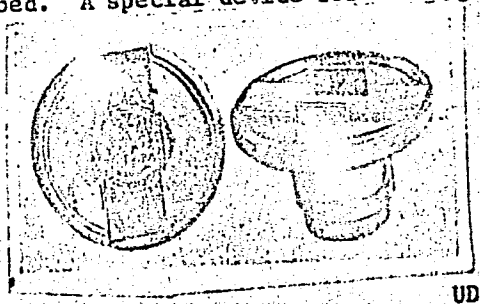


Fig. 1. Device for bending glass plates

UDC: 621.378.325

Card 1/2

L 4211-66

ACC NR: AP5027037 O

The plates (3 x 10 cm) were sputtered with a 13-layer dielectric coating (ZnS and MgF_2). The mirror alignment was such that the cylinder generators were mutually perpendicular. The distance between mirrors was 3.8 m (their radius of curvature was also ~3.8 m). Generation occurred at 6328 Å in a cylinder 3.5 m long and 10 mm in diameter and also when the mirrors were rotated by ~40°. Further rotation of the mirrors disrupted the generation. Only axial modes were set up, although transverse modes could be set up in an identical resonator with spherical mirrors of the same curvature radius. Orig. art. has: 3 figures. [YK]

SUB CODE: EC, OP/ SUBM DATE: 30Sep64/ ORIG REF: 002/ OTH REF: 000/ ATD PRESS: 4121

Card 2/2 DP

KOLOMNIN, G., inzhener.

Development of precast one-and-two-story housing construction. (MLRA 10:10)
Stroi.mat.3 no.9:21-24 S '57.
(Building blocks) (Housing)

KOLOMNIN, G. P.

Zavodskoye proizvodstvo domov (Prefabrication of houses) Moskva, Gos. izd-vo Literatury Po stroitel'stvu i Arkhitekture, 1953.
266 p. illus., tables, diagrs.

KOLOMNIN, G.P.

NOVOSEL'SKIY, N.L., inzhener; KUNIN, V.M., inzhener; DROZDOV, I.IA.; KOLOMNIN, G.P., nauchnyy redaktor; KUYBYSHEVA, G.V., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy redaktor

[Building slabs made of organic fibers] Stroitel'nye plity iz organicheskogo volokna. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1956. 328 p. (MLRA 9:10)
(Building materials) (Fibers)

SHAPIRO, Arkadiy Davydovich; KOLOMNIN, G.P., red.; BEL'CHENKO, N.I., red.izd-va; PROKOF'YEVA, L.N., tekhn.red.

[Production of wood-fiber blocks and particle board] Proizvodstvo stroitel'nykh plit iz volokna i drevesnykh chastits. Moskva, Goslesbumizdat, 1959. 57 p. (MIRA 13:4)
(Wood, Compressed) (Hardboard)

KOLOMNIN, G. P.

For fuller and more resourceful supply of the needs of builders for wooden items. Stroi.mat., izdel.i konstr. 2 no.5:1-4 My '56. (MLRA 9:8)

1. Glavnyy inzhener Glavstandartdoma Ministerstva promyshlennosti stroitel'nykh materialov SSSR.
(Woodworking industries)

SKOBLOV, Dmitriy Alekseyevich.; KOLOMNIN, G.P., inzh., nauchnyy red.; PAKHOMOVA, M.A., red. izd-va.; TEYERMAN, T.M., tekhn. red.

[Using fibrolite in building] Fibrolit v stroitel'stve. Moskva, Goz. izd-vo lit-ry po stroit, arkhit. i stroit. materialam, 1958. 43 p. (MIRA 11:11)

(Sillimanite)

BRANDT, Georgiy Georgiyevich; KOLOMNIN,G.P., redaktor; SIDEL'NIKOVA,L.A., redaktor; SHITS,V.P., tekhnicheskiy redaktor;

[Production of bonded wood materials; based on data from foreign literature] Proizvodstvo drevesno-listovykh materialov; po dannym inostrannoi literatury. Moskva, Goslesbumizdat, 1956. 63 p. (MLRA 9:4)
(Plywood)

KARLSEN, G.G., doktor tekhn.nauk, prof.; BOL'SHAKOV, V.V., doktor tekhn.nauk, prof.; KAGAN, M.Ye., doktor tekhn.nauk, prof.; SVENTSITSKIY, G.V., kand.tekhn.nauk, dotsent; ALEKSANDROVSKIY, K.V., dotsent; BOCHKAREV, I.V., kand.tekhn.nauk, dotsent [deceased]; KOLOMIN, A.I., doktor tekhn.nauk; Prinimali uchastiye: KOLOMIN, G.P., insh.; SILIN, V.N., dotsent, kand.tekhn.nauk; PISCHIKOV, V.G., kand.tekhn.nauk, dotsent, nauchnyy red.; IVANKOV, P.T., dotsent, red.; BORODINA, I.S., red. izd-va; RUDAKOVA, N.I., tekhn.red.

[Wooden structures] Dereviannye konstruktsii. Izd.3., perer. i dop. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 642 p. (MIRA 15:2)

1. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Karlsen).

(Building, Wooden)

KOLOMNIN, G.

Consolidate and specialize the production of wooden structural elements and parts. Na stroi.Ros. no.12:19-21 D '61. (MIRA 16:1)

1. Nachal'nik otdela plasticheskikh materialov i stroydetaley Gosstroya RSFSR.
(Woodworking industries)
(Building fittings)

KOLOMNIN, G.P., inzh.; ARSEN'YEV, L.B., inzh., nauchnyy red.; KHANYUTIN, M.Ya. [deceased], red.izd-va; GUREVICH, M.M., tekhn. red.

[Prefabrication of houses] Zavodskoe proizvodstvo domov. Moskva, Gos. izd-vo lit-ry po stroit. i arkhit. 1953. 266 p. (MIRA 16:7)

(Buildings, Prefabricated)

BARAKS, Aleksandr Markovich; NIKIFOROV, Yuriy Nikolayevich; POPOV, K.A., prof., retsenzent; KOLOMNIN, G.P., inzh., red.

[Deep impregnation of wood by the use of incisions] Glubokaia propitka drevesiny putem primeneniia nakolov. Moskva, Izd-vo "Lesnaia promyshlennost'," 1964. 155 p. (MIRA 17:5)

L 21530-66
ACC NR: AP6007164 SOURCE CODE: UR/0115/65/000/012/0030/0033

AUTHOR: Beloshapko, V. D.; Kolomnin, V. V.; Rozhdestvenskiy, G. N.; Fedorin, V. P.

ORG: Dolgoprudnensk Machine-Building Plant (Dolgoprudnenskiy mashinostroitel'nyy zavod)

TITLE: Automatic discrete contactless voltmeter for measuring effective values of arbitrary-waveform voltages

SOURCE: Izmeritel'naya tekhnika, no. 12, 1965, 30-33

TOPIC TAGS: voltmeter, digital voltmeter

ABSTRACT: The proposed voltmeter is based on a comparison of the resistances of a T8-S1 thermistor heated by the measurand and by a stepped d-c voltage. The voltages are applied alternately to the thermistor by contactless semiconductor switches. The voltmeter comprises a synchronizer, a thermistor, three semiconductor switches for applying voltages and gating measuring pulses, a pulse extender, two coincidence circuits for determining the error phase, two dividers for enhancing noise elimination, a phase-fixing flip-flop, a control decatron, a 3-digit indicating switch, and a stabilized d-c source. The voltmeter was tested with 200—2000-cps square pulses, and its readings differed from estimated values by 10 mv or less when voltages of 9—10 v were measured. A reading instability of ±10 mv was observed over

Card 1/2 UDC: 621.317.326

L 21530-66
ACC NR: AP6007164 O

a period of 30 min when a sinusoidal voltage at 25--20,000 cps was measured. Orig. art. has: 3 figures and 4 formulas. [03]

SUB CODE: 09/ SUBM DATE: none/ ORIG REF: 001/ ATD PRESS: 4219

Card 2/2 dda

BERNSHTEYN, G.D., kand. tekhn. nauk; KOLOMYTSEV, I.V.; SURKO, V.I.; KOLOMOR, S.A.

Causes of inadequate oil purification in motor-vehicle engines. Avt. prom. 31 no.3:15-18 Mr '65. (MIRA 18:7)

1. Kazakhskiy gosudarstvennyy sel'skokhozyaystvennyy institut.

IN'SHAKOV, N.N.; KOLOMOVA, Ye.F.

Changes in surface metal layers caused by non-lubricated sliding friction and their effect on the wear risistance of friction devices of railroad cars. Trudy Sem.po kach.poverkh. no.5:392-400 '61. (MIRA 15:10)
(Friction) (Railroads—Cars)

NEUDACHIN, G.I.; KURKOV, G.A.; SULTANOV, B.Z.; KOLOMOYETS, A.V.

Practice of using double-column vacuum pipes. Razved. i okh. nedr 29 no.9:54 S '63. (MIRA 16:10)

1. Sverdlovskiy gornyy institut.

GAFIYATULLIN, R.Kh., inzh.; KOLOMOYETS, A.V., inzh.; TROP, A.Ye., prof.

Method of obtaining a maximum vibration amplitude by eliminating the catching of drilling equipment and casing pipe. Izv.vys.ucheb.zav.; gor.zhur. 7 no.7:153-157 '64. (MIRA 17:10)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana kafedroy tekhniki razvedki.

KOLOMOYETS, A.V., inzh.

Calculation of power operated cutting vibrators. Izv.vys.ucheb. zav.:gor.zhur. 7 no. 1:112-116 '64. (MIRA 17:5)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy tekhniki razvedki.

NEUDACHIN, G.I.; KOLOMOYETS, A.V.

Sinking hydraulic vibrator for eliminating accidents in core drilling. Razved. i okh. nedr. 30 no.8:31-32 Ag '64. (MIRA 17:10)

1. Sverdlovskiy gornyy institut.

KOLOMOYETS, A.V., aspirant

Investigating bottom mechanical vibrators. Izv.vys.ucheb.zav.; geol. i razv. 8 no.2:132-141 F '65. (MIRA 18:3)

1. Sverdlovskiy gornyy institut im. V.V.Vakhrusheva.

DOROSHOK, A.P., inzh.; KOLOMOYETS, G.I.

Modernization of the K-48 petroleum cutter. Svar. proizv. no.3:39 Mr '61. (MIRA 14:3)

1. Zhdanovskiy zavod tyazhelego mashinostroyeniya.
(Gas welding and cutting)

23131
S/181/61/003/005/036/042
B125/B202

24,7300 (1136, 1160, 1482)

AUTHORS: Semenkovich, S. A., Kolomoyets, L. A., Kolomoyets, N. V.

TITLE: Crystallization of Bi, Te, and Bi_2Te_3 by means of the Peltier effect

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1597-1600

TEXT: This paper written upon a suggestion by A. F. Ioffe deals with the crystallization of substances by means of the Peltier effect. In this case the phase boundary could be displaced by 3 to 4 cm due to almost isothermal conditions. Experimental arrangement: two conditions had to be fulfilled: (1) direct observation of velocity and motion of the phase boundary; (2) isothermal conditions must prevail in the substance. The substance to be studied was molten in a furnace in a pyrex or quartz combustion boat. The temperature distribution is shown in Fig. 1. With this temperature distribution the boundary between solid and liquid phase can be determined before the direct current is switched on. The furnace consisted of two concentrically arranged transparent quartz tubes. Experimental results: the experiments were made with Bi, Te, and Bi_2Te_3. In all substances studied

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23131
S/181/61/003/005/036/042
B125/B202

Crystallization of Bi, ...

the phase boundary could be shifted by 3-4 cm. In Bi and Bi_2Te_3 solidification occurred when the positive pole was applied to the solid phase which corresponds to a negative Peltier coefficient. In Te, solidification occurred with inverse polarity (positive Peltier effect). The crystallization front to which the current is applied is a sufficiently straight line running in perpendicular to the axis of the boat. Melting took place extremely irregularly with strong distortion of the separating lines of the phase. These facts may be explained as follows: When applying the current along the axis of the combustion boat each distortion of the crystallization front due to a fluctuation of the thermal field or the current distribution, is equivalent to a parallel connection of a liquid volume a and a solid volume b to the direct current circuit, as is shown in Fig. 3. In the crystallization of semiconductors the boundary between solid and liquid phase is leveled up. On melting, an increasing curvature is observed. This suggested that in the motion of the phase boundary in metals, crystallization caused by the Peltier effect will be accompanied by a curvature of the phase boundary. On melting, however, a distinct boundary will occur. The leveling up of the crystallization front in semiconductors

Card 2/6

Crystallization of Bi, ...

can be used for improving the qualities of the p-n junctions produced by zone-melting with variable velocity of motion of the molten zone as well as for the growing of dislocation-free crystals. The following Peltier coefficients were obtained: Bi -0.012_5; Te $+0.16$; Bi_2Te_3 -0.016_6. These Peltier coefficients were obtained from the expression

$$v=\frac{1}{Q}\left[\Pi j-\frac{1}{2}j^2(\rho_{s_1}l_{s_1}+\rho_{s_2}l_{s_2})+\varkappa_{s_1}\frac{\Delta T_{s_1}}{l_{s_1}}-\varkappa_{s_2}\frac{\Delta T_{s_2}}{l_{s_2}}\right], \qquad (1)$$

for the velocity of motion of the phase boundary. Q denotes the melting heat (in watt/cm^3), j - current density, ρ - resistivity, l - length of phase, $\varkappa$ - coefficient of thermal conductivity, and ΔT the temperature decrease at the entire length of the phase. The subscripts "s" and "l" refer to the solid and liquid phases. Expression

$$\Pi=\frac{(v-v_0)Q}{j-\frac{j^2}{2j_{opt.}}}. \qquad (3)$$

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Crystallization of Bi, ...

was used for the calculations where v_o denotes the velocity of motion of the phase boundary without direct current ($j = 0$). All substances studied were strongly isotropic; therefore, the rates of growth of the crystals along the crystallographical axes differ. The crystals which were originally oriented toward the crystallization front (so that they had a maximum rate of growth) expel all others, and the properties of the solidified casting are determined by the properties warranting a maximum rate of growth. In the direction of growth the casting must be characterized by the values of π, $\sigma = 1/\varrho$, and $\varkappa$. The properties of the casting may be influenced by a reduction of the temperature gradient along the phase boundary. There are 3 figures and 5 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The two most important references to English-language publications read as follows: Pfann, Benson, and Wernick, J. Electronics, 2, 597 (1957). J. Barden and B. S. Chandrasekhar. Journ. Appl. Phys., 29, 1372, 1958.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors Leningrad)

SUBMITTED: December 13, 1960

Card 4/6

37066
S/057/62/032/004/012/017
B139/B102

26.2532

AUTHORS: Moyzhes, B. Ya., Petrov, A. V., Shishkin, Yu. P., and Kolomoyets, L. A.

TITLE: Choice of the optimum design of a cascade thermocouple

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 4, 1962, 461-472

TEXT: A method was developed for calculating the efficiency of a thermocouple consisting of several sections made of different alloys to ensure the best thermoelectrical properties for each temperature range in question. If the optimum current is expressed by

$I_{opt} = \frac{\varkappa S}{\alpha T}\frac{dT}{dx}(M - 1) = \frac{Q_\varkappa (M - 1)}{\alpha T}$ (4), one finds $d\eta_{max} = \frac{dT}{T}\frac{M - 1}{M + 1}$ (5) for one section. dT is the temperature gradient, ρ is the resistivity of the section, dx is its length, S is the wire cross section,

$M = \sqrt{1 + zT}$, $Q_\varkappa$ is the heat flux, $z = \frac{\alpha^2 \sigma}{\varkappa}$, α is the thermo-emf,

Card (1/3)

Choice of the optimum design of ...

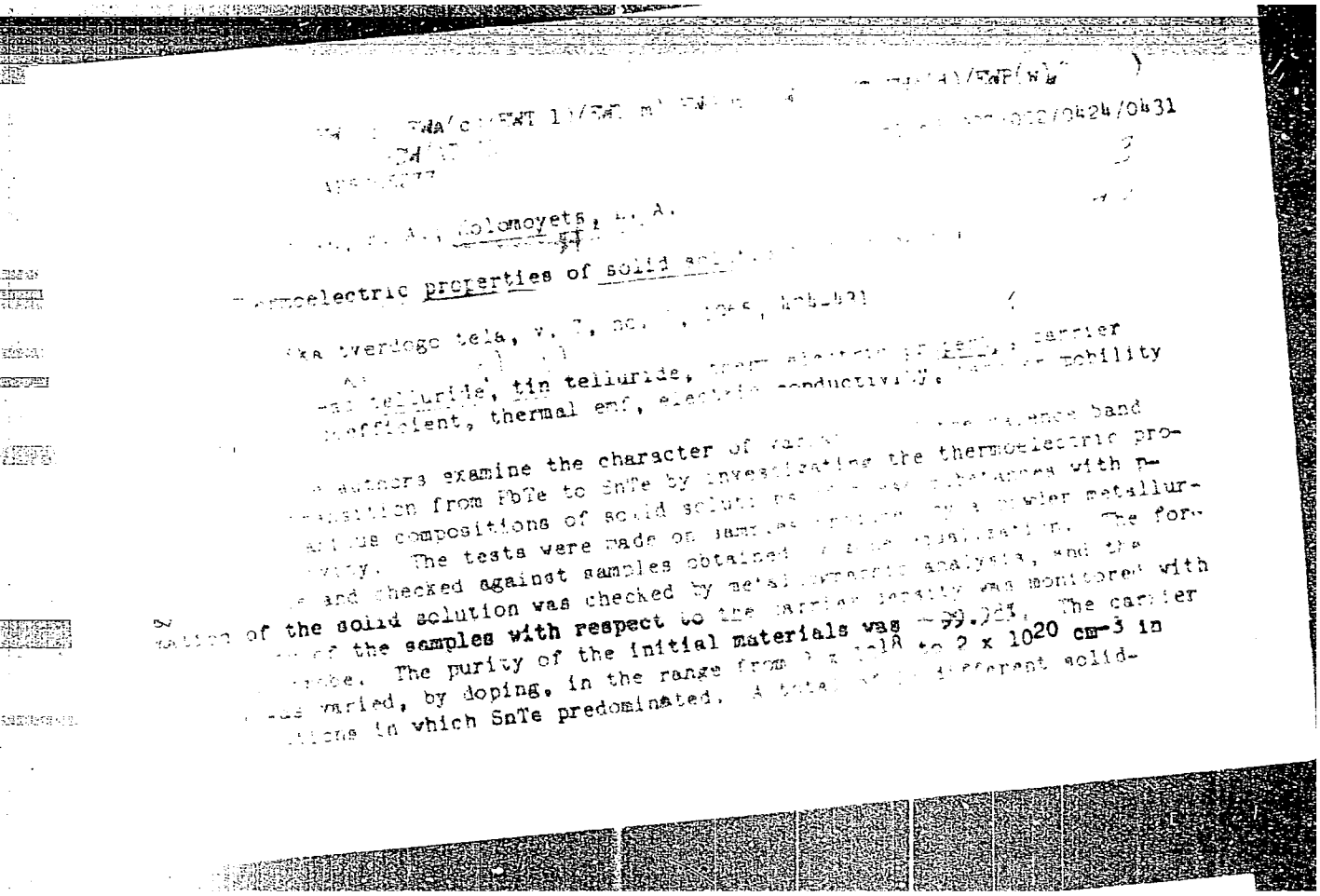
σ is the electrical conductivity, and $\varkappa$ is the thermal conductivity. The differential equations are solved, and the part of Joulean, Thomson, and Peltier heat returning to the hot junction is calculated. Each section is assumed to have equal thermal conductivity. As the efficiency cannot be separately determined for each section, the ratio between $d\eta$ and the maximum efficiency, $d\eta_{max}$, of the material used for the section in question is calculated, and an approximate condition is derived from (4) at $zT \lesssim 1$: $\frac{\varkappa}{z\rho} = \text{const}$. Then j_{opt} is determined, and the actual efficiency of the entire thermocouple is calculated. The complete calculation of a thermocouple is presented for purposes of illustration. Bi_2Te_3 alloys are used for low temperatures, and PbSe alloys for high temperatures. The thermocouple consists of 4 sections in the negative branch, and of 3 sections in the positive one. The temperature range is 20-700°C, and η = 12.7%. For the negative branch, the $d\eta/d\eta_{max} = f(T)$ curves are better than for the positive branch, where $d\eta/d\eta_{max}$ near 700°C becomes negative and thus reduces the total emf.

Card 2/3

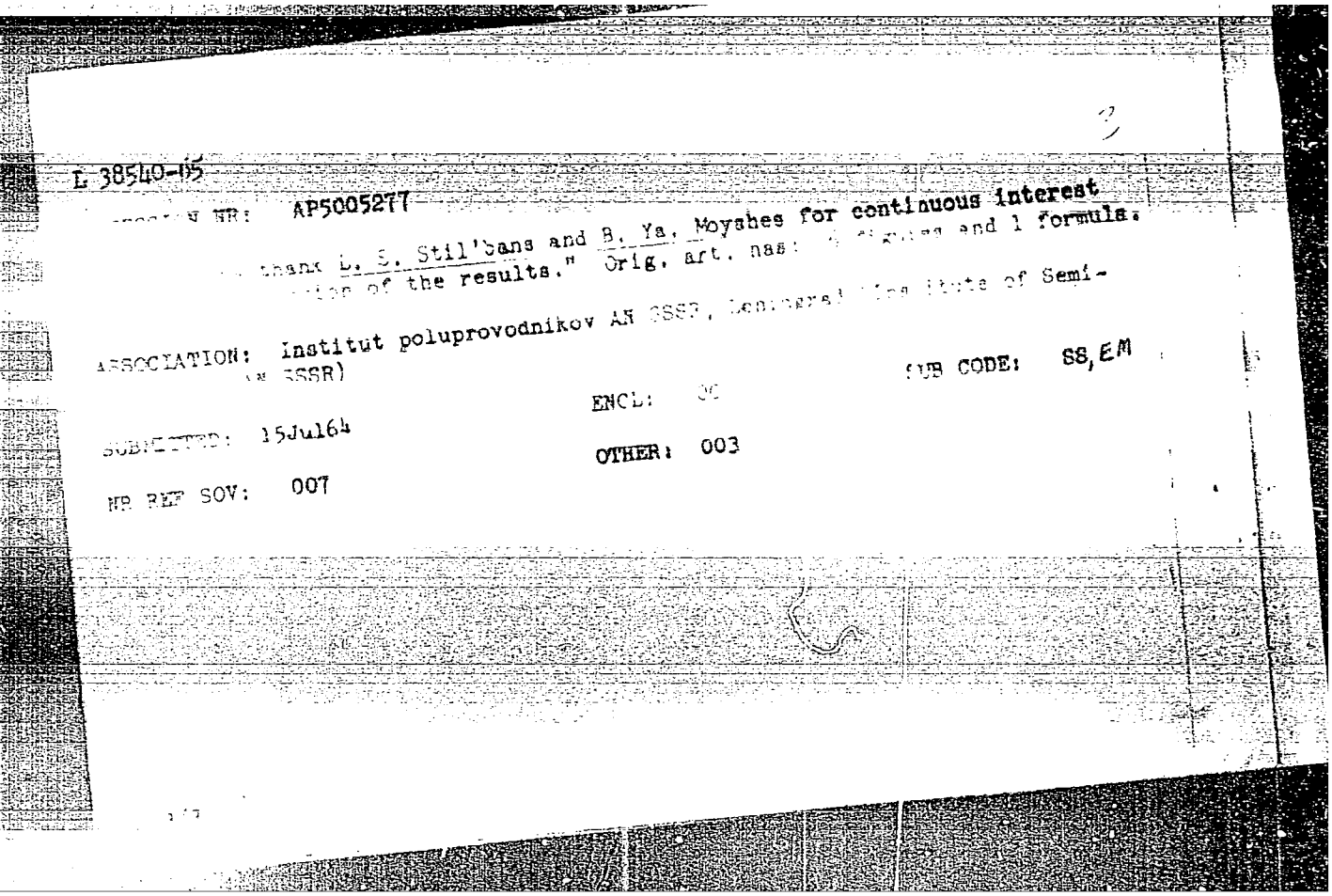
MOYZHES, B.Ya.; PETROV, A.V.; SHISHKIN, Yu.P.; KOLOMOYETS, L.A.

Selection of optimum working conditions for a cascade thermoelement. Zhur.tekh.fiz. 32 no.4:461-472 Ap '62. (MIRA 15:5)

1. Institut poluprovodnikov AN SSSR, Leningrad.
(Thermoelectric apparatus and appliances)



...positions were tested by measuring the Hall coefficients, the thermal ...electric conductivity, and by calculating the carrier density and ... low concentrations there is good agreement between the concen... ...ence of the thermal emf and the temperature ... one type of ... a constant effective mass and with ... exponent ... energy dependence of the carrier ... this means ... concentration region ($n \leq 10^{19}$ cm^{-3}) the ... and does not in... ... the thermoelectric properties of the alloys ... of solid solutions with ... ...ent, the second band begins to ... and its effect ... a change in the concentration dependence ... thermal emf. The ... the hole mobility on the composition ... solid solution, when ... exceeds 10 mol.%, is in qualitative agreement with the decrease ... effective mass upon addition of SnTe. The steep decrease in mobility, ... when small amounts of SnTe are added ... cannot be attri... ... either additional scattering by the tin atoms or by the change in the ... mass. It may be due either to an increase in the intervand scattering ... change in the mutual placement of the bands) or to a change in the ...formation potential, but both hypotheses need further verification. A model ...alence band with two types of valleys is proposed for the solid solution.



L 38540-65

ACCESSION NR: AP5005277

... thank B. S. Stil'bans and B. Ya. Moyzhes for continuous interest ... discussion of the results." Orig. art. has: [illegible] figures and 1 formula.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

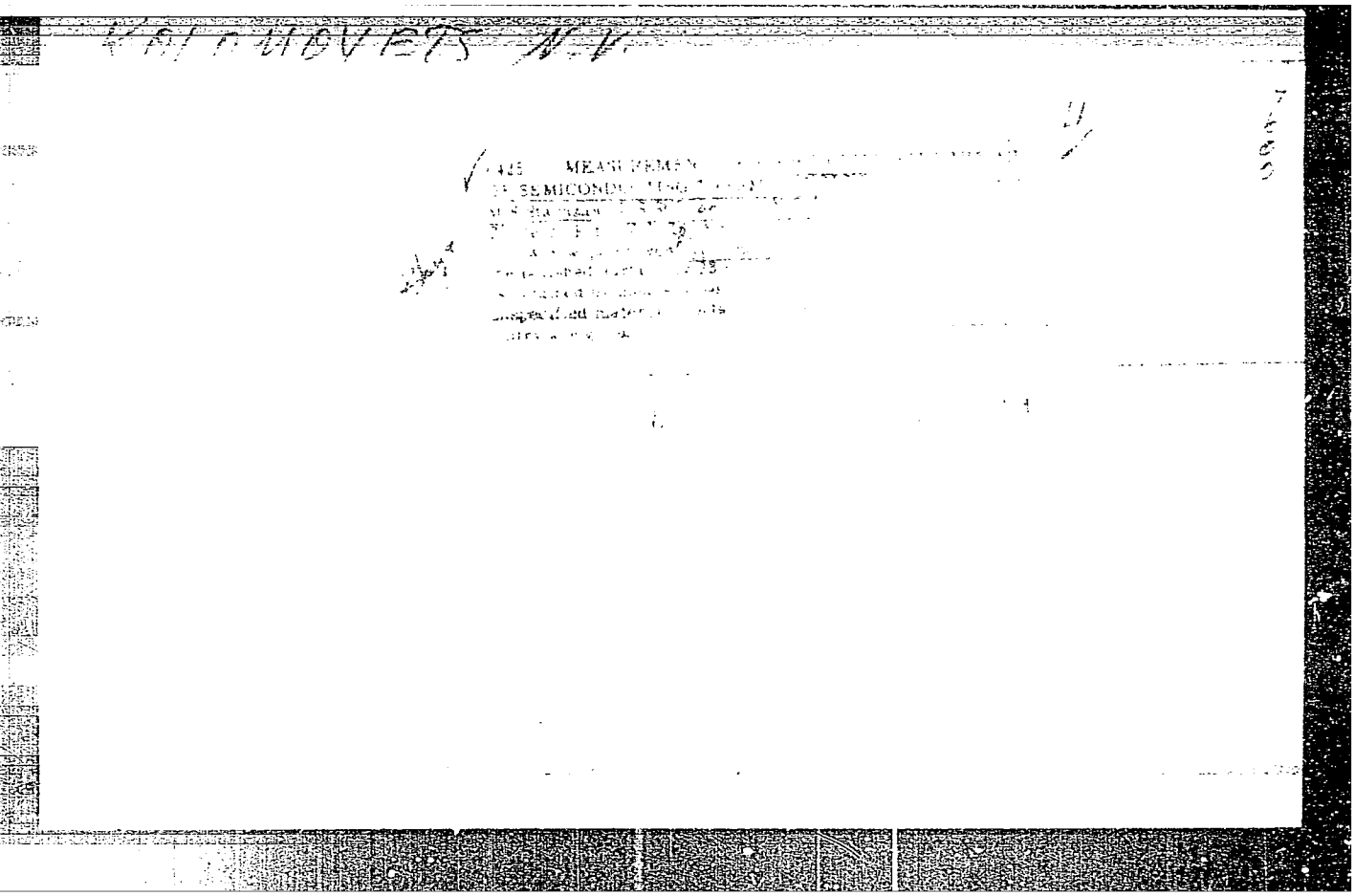
SUBMITTED: 15Jul64 ENCL: 00 SUB CODE: SS, EM

NR REF SOV: 007 OTHER: 003

YEFIMOVA, B.A.; KOLOMOYETS, L.A.

Thermoelectric properties of PbTe - SnTe solid solutions. Fiz. tver. tela 7 no.2:424-431 F '65. (MIRA 18:3)

1. Institut poluprovodnikov AN SSSR, Leningrad.



KOLOMOYETS, N.V.

USSR/ Laboratory Equipment. Apparatuses, Their Theory, Construction and Application. I

Abs Jour: Referat. Zhur.-Khimiya, No. 8, 1957, 27361.

Author : A.F. Ioffe, S.V. Ayropetyants, A.V. Ioffe, N.V. Kolomoyets, L.S. Stil'bans.

Inst. Academy of Sciences of USSR.

Title : Efficiency Increase of Semiconductor Thermocouples.

Orig Pub: Dokl. AN SSSR, 1956, 106, No. 6, 981.

Abstract: With a view to increase the ratio of the mobility of electricity carriers to the heat conductivity of the lattice, it is proposed to introduce thermocouples of substances possessing approximately the same lattice constant into the first named crystalline lattice.

Card 1/1

AUTHOR: KOLOMOYETS,N.V., STAVITSKAYA,T.S., STIL'BANS,L.S. PA - 2173

TITLE: Thermoelectric Properties of PbTe - PbSe (Issledovaniye termoelektricheskikh svoystv telluristogo i selenistogo svintsa, Russian)

PERIODICAL: Zhurnal Tekhn.Fis. 1957, Vol 27, Nr 1, pp 73-81 (U.S.S.R.)

Received: 2 / 1957 Reviewed: 4 / 1957

ABSTRACT: This paper investigates PbTe and PbSe and a solid solution of PbTe - PbSe, i.e. polycrystalline samples produced according to the metal-ceramic process. The thermoelectromotoric force, electric conductivity, and the HALL effect were measured by means of the usual method.

The range of high temperatures: A diagram demonstrates the temperature dependence of the thermoelectromotive force for a sample of electronic PbTe (concentration of the carriers $n = 9{,}9{,}10^{18}$ cm^{-3}) in the temperature interval 0 - 450° C. The following facts result from this and other diagrams: a) The dependence of thermoelectromotive force on the temperature and concentration of charge carriers agrees approximatively with the theory. b) The experimental values of the thermoelectromotive force differ with respect to their absolute value from the theoretical value by 120 microvolt/degrees for PbTe. In the case of PbSe this difference is somewhat smaller. It may have two reasons:

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1) Either the actual mass of carriers is approximately 2,5 times as small as the mass of the free electron, or 2) a certain term of the here given formula is incorrect. For PbTe $u \sim T^{-3}$ applies with great accuracy, and for electronic PbSe $u \sim T^{-5/2}$ applies. Here u denotes the mobility of the not degenerated carriers and T the temperatures in Kelvin degrees. For hole-like PbSe $u \sim T^{-3}$ applies.

The range of low temperatures: At temperatures of less than 200° K a deviation of temperature dependence of the thermoelectromotive force from the here given theoretical dependence is observed. Furthermore, the temperature dependence of mobility deviates from the law $u \sim T^{-3}$. These deviations can have two reasons: 1) Occurrence of a degeneration, 2) Modification of scattering mechanism, i.e. a transition from scattering by the thermal oscillations of the lattice to the scattering by ionized atoms of the admixture. Unfortunately, the hitherto found experimental data do not make it possible to decide between these two reasons.

The thermoelectric properties of the solid solution PbTe-PbSe: Among others the following fact was determined: The mobility of current carriers is the smaller the greater the deviation

Card 2/3

AUTHOR: Kolomoyets, N. V. 57-28-5-4/36

TITLE: On Thermoelectrical Properties of Some Compounds and Alloys With a Strongly Degenerated Electron Gas (O termoelektricheskikh svoystvakh nekotorykh soyedineniy i splavov s sil'no vyrozhdennym elektronnym gazom)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 5, pp. 936-939 (USSR)

ABSTRACT: In the last year experimental data were obtained on the thermoelectrical properties of a number of carbides, nitrides and borides of transition metals at the Institute for Semiconductors of the AS USSR. A characteristic feature of these substances is the relatively low values of the e.m.f. and a linear increase of the specific resistance with a temperature rise. The magnitude of the specific conductivity varies from one to several ten thousand $ohms^{-1}.cm^{-1}$ for the greater part of them. This permits to apply metal theory to these compounds. In pure metals the thermo e.m.f. must be exactly proportional to temperature (Ref 1). The reason for the difference between the theoretical and the experimental dependence of thermo e.m.f. can presumably be found, in the fact that complicated compounds with additional quantities of dissolved admixtures are con-

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cerned. As is known, a theoretical formula for the thermo e.m.f. was set up by Mott (Ref 2): $$\alpha = \frac{\pi^2 k^2 T}{3e}\left[\frac{\partial \ln \sigma}{\partial \zeta}\right]_\mu \quad (3)$$ which is applicable to metals and alloys. A more obvious formula can be found from a kinetic equation from a physical point of view on the assumption, that the derivative of the square of the velocity modulus v^2 is only a function of energy during the relaxation period of the carriers τ (Ref 6)

$$\alpha = \pm \frac{\pi^2 k^2 T}{3e}\left[\frac{1}{v^2}\frac{dv}{d\zeta} + \frac{1}{q}\frac{dq}{d\zeta} + \frac{1}{\tau}\frac{d\tau}{d\zeta}\right]_\mu \quad (5)$$

This formula (5) is applicable to all substances with a strongly degenerated electron gas of uniform sign, disregarding, whether the law is satisfied or not. The existence of a certain amount of dissolved admixtures or of other defects can be taken into consideration, if in formula (5) $\frac{1}{\tau}$ is replaced by $\frac{1}{\tau_r} + \frac{1}{\tau_p}$. It must be noticed, that the position of the Fermi level in the alloy differs from its position in the pure metal since the presence of atoms of different valence in the lattice modifies the concentration of the carriers. If all variables, on which the magnitude of thermo e.m.f. is dependent

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upon are known, it is possible to pass a judgement on the applicability of the substance in question in thermoelectric device, (Ref 9). In cases, where the law by Wiedemann-Franz (Videman-Frants) is satisfied, substances with a maximum thermo e.m.f. must be found. From the given formulae it appears that it is desirable to reach such a position of the Fermi level in alloys, where the quantity $\left(\frac{dq}{d\xi}\right)_{\mu}$ has a maximum value. Further conclusions as to quantity and quality can be drawn from a measurement of the temperature dependence of thermo e.m.f. and of the specific gravity of a number of alloys. There are 4 Soviet references.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad
(Institute for Semiconductors AS USSR, Leningrad)

SUBMITTED: October 1, 1957

Card 3/3

1. Alloys--Electrical properties 2. Alloys--Thermal properties
3. Electron gas--Properties

KOLOMOYETS, N.V.; MESHPOR, V.S.; SAMSONOV, G.V.; SEMENKOVICH, S.A.

Thermoelectric properties of certain metal like compounds..
Zhur. tekh. fiz. 28 no.11:2382-2389 N '58. (MIRA 12:1)
(Carbides) (Borides) (Thermoelectricity)

83019
S/181/60/002/008/038/045
B006/B063

24.7600

AUTHORS: Kolomoyets, N. V., Popova, Ye. A.

TITLE: The Thermoelectric Properties of the Intermetallic Compound $MnAl_3$

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1951 - 1955

TEXT: The thermoelectromotive force of $MnAl_3$ is known to be largely dependent on the ratio between its various components. At 19.8 vol% of manganese, the coefficient of the thermo-emf $\alpha = -0.56\ \mu v/deg$, and at 24.1 vol% $\alpha = +27.3\ \mu v/deg$. α may thus be increased considerably by means of a manganese excess above the stoichiometric ratio. The authors obtained $MnAl_3$ samples with $\alpha = +70\ \mu v/deg$, which was partly due to the high purity of the starting material. The two components were fused at 1,100 - 1,200°C, and the resulting cylindrical samples, which had a diameter of 8 mm and a length of 25 mm, were tempered at 700 - 750°C for 12 - 13 hours, so that homogeneous, single-phase samples were available. The various samples had a manganese excess of 0 - 2 mole%. Thermo-emf and

Card 1/3

The Thermoelectric Properties of the Intermetallic Compound $MnAl_3$

conductivity were measured between 300° and 1,100°K. The method is described in detail. Fig. 1 shows the instrument used to measure α. Figs. 2-4 illustrate the results obtained. Fig. 2 shows α as a function of the manganese excess. At about 0.6 mole% of manganese excess, this curve has a peak. Fig. 3 shows $\ln\sigma = f(1/T)$. The course taken by these functions is typical of semiconductors. The semiconductor nature of the compound investigated may also be seen from the kind of temperature dependence of its thermo-emf, which clearly indicates the transition from impurity conductivity to intrinsic conductivity (Fig. 4). The course of the concentration dependence of the thermo-emf indicates the existence of a compound $Mn_{1.005}Al_3$ which is not yet known. Around room temperature, the curves of $\ln\sigma = f(1/T)$ have the small slope that corresponds to an activation energy (an impurity) of $\Delta E_1 = 0.025$ ev. Two different slopes may be seen at higher temperatures: $\Delta E_2 = 0.45$ ev (samples 1,2,5) and $\Delta E_3 = 0.58$ ev (samples 3,4). As samples 3 and 4 deviate only little from the stoichiometric ratio (0.4 and 0.6 mole%), it is assumed that ΔE_3 is the activation energy of the intrinsic carriers of this compound, and that

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823920010-6"

83019

The Thermoelectric Properties of the Intermetallic Compound $MnAl_3$

S/181/60/002/008/038/045
B006/B063

ΔE_2 is the value of a transition from the activation energy of an impurity to the forbidden band width. On the other hand, it may be assumed that two different structures exist, and that ΔE_2 and ΔE_3 are the forbidden band widths of these two phases. At high temperatures, all samples showed a change of α from the positive to the negative sign. Finally, the hole mobility at room temperature was determined from the Hall constant. $u_+ \simeq 200$ cm²/v.sec was obtained. The negative sign of the thermo-emf in the range of intrinsic conductivity indicates that the electron mobility $u_- > u_+$. There are 4 figures and 2 references: 1 Soviet and 1 French.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED: January 29, 1960

86426

S/181/60/002/011/010/042
B006/B056

26.2532

AUTHORS: Vedernikov, M. V. and Kolomoyets, N. V.

TITLE: Thermoelectric Properties of Solid Solutions of Chromium, Vanadium, and Titanium With Nickel

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 11, pp. 2718-2727

TEXT: The authors give a very detailed report on measurements of the resistivity and thermo-emf of binary alloys of nickel with chromium, vanadium, and titanium with 99.8% [Ni], 99.5% [Cr], 95.0% [V], and 99.5% [Ti] purity of the respective components. The alloys were produced by vacuum fusion of the components in corundum crucibles supplied by the Podol'skiy zavod ogneuporov (Podol' Refractory Plant). The melting furnace used is shown in a drawing. The resistivity ϱ and thermo-emf α of the specimens were measured with a compensation circuit and a ППТН-1 (PPTN-1) potentiometer which was sensitive up to 10^{-7} v. The temperature dependence of α and ϱ was measured in vacuo between room temperature and 1200°C. The measurements are shown in diagrams. Fig.2 shows the concentration dependence of the additional resistivity $\Delta\varrho$ of the systems

Card 1/4

Thermoelectric Properties of Solid Solutions of Chromium, Vanadium, and Titanium With Nickel

S/181/60/002/011/010/042
B006/B056

Ni-Cr (1), Ni-V (2), and Ni-Ti (3) at 15°C. It is shown (Fig.3) that ΔQ may be described by the relation $\Delta Q = ca + cbN^2$, where N = 2, 3, 4 for Ti, V, and Cr, respectively. The concentration of Ti, V, and Cr, respectively, amounts to c=5% in all cases. Fig.4 shows Q as a temperature function of an Ni-Cr alloy with different chromium concentrations; Fig.5 shows the same for Ni-V, and Fig.6 for Ni-Ti. The curves all take a similar course. For the thermo-emf of nickel it is found that the relation $\alpha_o = -AT\left(\frac{1.5}{\mu} + \frac{x}{\varepsilon_o - \mu}\right)$ holds (ε_o - upper edge of the d-band). The temperature dependence of the thermo-emf is shown for Ni-Cr alloys in Fig.7, for Ni-V in Fig.8, and for Ni-Ti in Fig.9. The curves again take a similar course; they all have in common that at low concentrations of the admixture they are entirely or partly in the range of the negative thermo-emf and have a minimum and a maximum, whereas at high concentrations the curves are smooth and are quite or partly in the positive range. The results obtained are discussed in detail. S. A. Semenkovich is thanked for his advice and interest. There are 10 figures, 1 table, and 14 references: 4 Soviet, 6 British, 3 US, and 1 Swedish.

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Thermoelectric Properties of Solid Solutions of Chromium, Vanadium, and Titanium With Nickel

S/181/60/002/011/010/042
B006/B056

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED: May 31, 1960

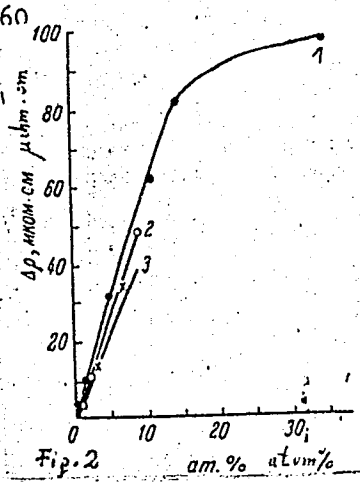

Fig. 2

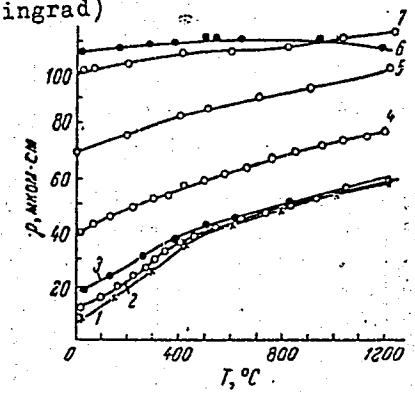

Рис. 4. Зависимость удельного сопротивления ρ от температуры для сплавов Ni—Cr.
1 — Ni; 2 — 0.5 ат. % Cr; 3 — 1.5 ат. % Cr; 4 — 5 ат. % Cr; 5 — 11.1 ат. % Cr; 6 — 15 ат. % Cr; 7 — 35 ат. % Cr.

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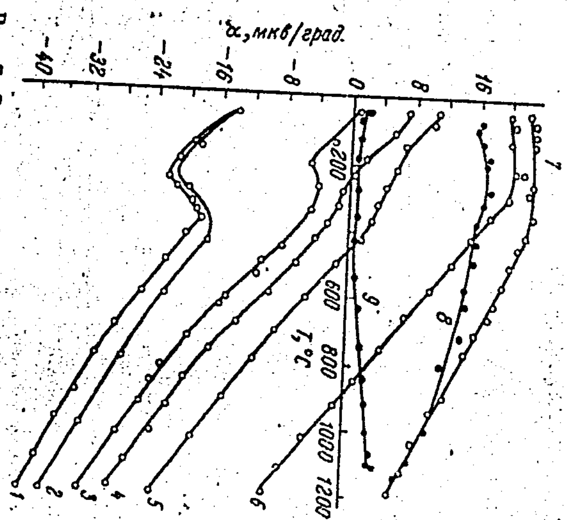

Рис. 7. Зависимость абсолютной дифференциальной термоэдс от температуры для сплавов Ni—Cr. 1 — никель чистоты 99.99% (зонной очистки); 2 — никель чистоты 99.8%; 3 — 0.5 ат.% Cr; 4 — 1 ат.% Cr; 5 — 1.5 ат.% Cr; 6 — 5 ат.% Cr; 7 — 11.1 ат.% Cr; 8 — 15 ат.% Cr; 9 — 35 ат.% Cr.

Card 4/4

23131
S/181/61/003/005/036/042
B125/B202

24,7300 (1136, 1160, 1482)

AUTHORS: Semenkovich, S. A., Kolomoyets, L. A., Kolomoyets, N. V.

TITLE: Crystallization of Bi, Te, and Bi_2Te_3 by means of the Peltier effect

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1597-1600

TEXT: This paper written upon a suggestion by A. F. Ioffe deals with the crystallization of substances by means of the Peltier effect. In this case the phase boundary could be displaced by 3 to 4 cm due to almost isothermal conditions. Experimental arrangement: two conditions had to be fulfilled: (1) direct observation of velocity and motion of the phase boundary; (2) isothermal conditions must prevail in the substance. The substance to be studied was molten in a furnace in a pyrex or quartz combustion boat. The temperature distribution is shown in Fig. 1. With this temperature distribution the boundary between solid and liquid phase can be determined before the direct current is switched on. The furnace consisted of two concentrically arranged transparent quartz tubes. Experimental results: the experiments were made with Bi, Te, and Bi_2Te_3. In all substances studied

Crystallization of Bi, ...

the phase boundary could be shifted by 3-4 cm. In Bi and Bi_2Te_3 solidification occurred when the positive pole was applied to the solid phase which corresponds to a negative Peltier coefficient. In Te, solidification occurred with inverse polarity (positive Peltier effect). The crystallization front to which the current is applied is a sufficiently straight line running in perpendicular to the axis of the boat. Melting took place extremely irregularly with strong distortion of the separating lines of the phase. These facts may be explained as follows: When applying the current along the axis of the combustion boat each distortion of the crystallization front due to a fluctuation of the thermal field or the current distribution, is equivalent to a parallel connection of a liquid volume a and a solid volume b to the direct current circuit, as is shown in Fig. 3. In the crystallization of semiconductors the boundary between solid and liquid phase is leveled up. On melting, an increasing curvature is observed. This suggested that in the motion of the phase boundary in metals, crystallization caused by the Peltier effect will be accompanied by a curvature of the phase boundary. On melting, however, a distinct boundary will occur. The leveling up of the crystallization front in semiconductors

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Crystallization of Bi, ...

can be used for improving the qualities of the p-n junctions produced by zone-melting with variable velocity of motion of the molten zone as well as for the growing of dislocation-free crystals. The following Peltier coefficients were obtained: Bi -0.012_5; Te $+0.16$; Bi_2Te_3 -0.016_6. These Peltier coefficients were obtained from the expression

$$v=\frac{1}{Q}\left[\Pi j-\frac{1}{2}j^2(\rho_{s_1}l_{s_1}+\rho_{s_2}l_{s_2})+\varkappa_{s_1}\frac{\Delta T_{s_1}}{l_{s_1}}-\varkappa_{s_2}\frac{\Delta T_{s_2}}{l_{s_2}}\right], \qquad (1)$$

for the velocity of motion of the phase boundary. Q denotes the melting heat (in watt/cm^3), j - current density, ρ - resistivity, l - length of phase, $\varkappa$ - coefficient of thermal conductivity, and ΔT the temperature decrease at the entire length of the phase. The subscripts "s" and "l" refer to the solid and liquid phases. Expression

$$\Pi=\frac{(v-v_0)Q}{j-\frac{j^2}{2j_{opt.}}}. \qquad (3)$$

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Crystallization of Bi, ...

was used for the calculations where v_o denotes the velocity of motion of the phase boundary without direct current ($j = 0$). All substances studied were strongly isotropic; therefore, the rates of growth of the crystals along the crystallographical axes differ. The crystals which were originally oriented toward the crystallization front (so that they had a maximum rate of growth) expel all others, and the properties of the solidified casting are determined by the properties warranting a maximum rate of growth. In the direction of growth the casting must be characterized by the values of π, $\sigma = 1/\varrho$, and $\varkappa$. The properties of the casting may be influenced by a reduction of the temperature gradient along the phase boundary. There are 3 figures and 5 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The two most important references to English-language publications read as follows: Pfann, Benson, and Wernick, J. Electronics, 2, 597 (1957). J. Barden and B. S. Chandrasekhar. Journ. Appl. Phys., 29, 1372, 1958.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors Leningrad)

SUBMITTED: December 13, 1960

Card 4/6

18.8100 1138 1530, 4016

28092
S/181/61/003/009/026/039
B104/B102

AUTHORS: Kolomoyets, N. V., and Vedernikov, M. V.

TITLE: Thermoelectrical properties of ferromagnetic metals and their alloys

PERIODICAL: Fizika tverdogo tela, v. 3, no. 9, 1961, 2735-2745

TEXT: This paper presents a systematic study of the thermoelectrical properties of alloys of transition metals of the 3d series with nickel. Alloys of Ti, V, and Cr with nickel have been studied previously (M. V. Vedernikov et al., FTT, II, 2718, 1960). This article describes solid solutions of Mn, Fe, and Co with nickel. The production of the alloys and the measuring techniques employed have been described in a previous paper. A detailed study of the relations between the thermoelectrical properties of ferromagnetic metals and their band structure shows that in transition metals a positive sign for the thermo-emf is also possible if the carriers are electrons. From the direct relation between thermo-emf and band structure it follows that it might be possible to draw conclusions from the thermoelectrical properties as to the band structure of the metals.
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Thermoelectrical properties ...

Experimental results on the temperature dependence of the absolute thermo-emf between 20 and 1200°C are presented for nickel, cobalt, iron, and for the systems Ni-Co, Ni-Fe, Ni-Mn, and Fe-Co. Based on these results the band diagrams shown in Fig. 3 for Ni, Co, and Fe are constructed by means of the relation $\alpha = - AT\left(\frac{3}{2\mu} - \frac{q'_{d_1} + q'_{d_2}}{q_{d_1} + q_{d_2}}\right)$, where q_{d_1} and q_{d_2} are the state densities in the sub-bands; q'_{d_1} and q'_{d_2} are their derivatives with respect to the energy at $\varepsilon = \mu$, where μ denotes the Fermi level. These band diagrams make it possible to explain the thermo-electrical properties of these alloys and also their magnetic properties. The representations developed here for the relations between thermoelectrical properties and band structure can be used in general to study the properties of various metals of the 3d transition series. A. G. Orlov performed the spectrum analyses. The author thanks S. A. Semenkovich for interest, and I. A. Kosavin for supplying the nickel and cobalt samples. There are 7 figures, 1 table, and 10 references: 5 Soviet and 5 non-Soviet. The three references to English-language publications read as follows: N. F. Mott, Proc.

Card 2/3

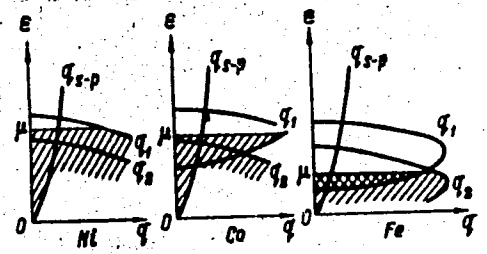
Thermoelectrical properties ...

Roy. Soc., 156, 368, 1936; J. B. Goodenough, Phys. Rev., 120, 67, 1960; N. F. Mott et al., Phil. Mag., 2, 1364, 1957.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors, AS USSR, Leningrad)

SUBMITTED: April 28, 1961

Fig. 3. Band diagrams for pure Ni, Co, and Fe.



Card 3/3

33418
S/032/62/028/002/030/037
B124/B101

24.2700

AUTHOR: Kolomoyets, N. V.

TITLE: Measurement of thermoelectromotive force and resistivity in the temperature range of 20 - 120°C

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 2, 1962, 238-240

TEXT: In the novel setup used to measure the thermo-emf and resistivities (Fig. 1) at ~1000°C, sample 1 was heated with molybdenum coil 2 which is three times longer than the sample to avoid heat flow from the faces of the sample. The necessary heat gradient in the sample was achieved by means of the non-uniform pitch of the coil which, together with the sample placed between two supports 3, is surrounded by three nickel screens 4. Thus, a temperature of 1200°C can be reached with 400 to 500 w. Probes 5 are used to measure the potential gradient in the sample. Thermocouples 6 passed through porcelain tube 7 are used for power supply to the sample. Tantalum springs 9 attached to the lateral supports 8 press the probes against the sample. The device rests on brass plate 12 under quartz

Card 1/2

Measurement of thermoelectromotive ...

vacuum-bell jar 15. An MBA47/5 (MVA 47/5) ammeter, a ППТН-1 (PPTN-1) or РПТВ (PrTV) potentiometer, and an M-21/5 (M-21/5) galvanometer are used in the measuring circuit. Temperatures can be measured with a Pt-PtRh or a chromel-aluminum thermocouple. The temperature difference is calculated from $\Delta T = \frac{V_1 - V_2}{\alpha_{ab}}$ (1), where V_1 and V_2 are values indicated by the thermocouples, and α_{ab} is the thermo-emf of one arm of the thermocouple related to that of the other, recorded at mean temperatures of the sample. There are 2 figures and 4 Soviet references.

ASSOCIATION: Institut poluprovodnikov Akademii nauk SSSR (Institute of Semiconductors of the Academy of Sciences USSR)

Fig. 1. Schematic diagram of the measuring device.

Card 2/2

KOLOMOYETS, N. V.

Dissertation defended for the degree of Candidate of Physicomathematical Sciences at the Technical Physics Institute imeni A. F. Ioffe in 1962:

"Investigation of Thermoelectrical Properties of Alloys and Several Compounds Based on Transition Meals."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

Kolomoyets, N.V.

The emf of chromium-group metals and their alloys.

Title: Seminar on refractory metals, compounds, and alloys (Kiev, April 1963).

Source: Atomnaya energiya, v. 15, no. 3, 1963, 266-267

KOLOMOYETS, N.V.; LEV, Ya.Ya.; SYSOYEVA, L.M.

Nature of current carriers in GeTe. Fiz. tver. tela 5 no.10: 2871-2876 O '63. (MIRA 16:11)

1. Institut poluprovodnikov AN SSSR, Leningrad.

ACCESSION NR: AP4019827 S/0181/64/006/003/0706/0713

AUTHORS: Kolomoyets, N. V.; Lev, Ye. Ya.; Syusoyeva, L. M.

TITLE: Electrical properties and a model of the valence band of germanium telluride

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 706-713

TOPIC TAGS: density state, semiconductor band structure, Fermi level, semiconductor carrier, impurity concentration

ABSTRACT: The authors have noted anomalies in the concentration and temperature dependence of the basic electrical properties (thermoelectromotive force, Hall concentration, mobility, and electrical conductivity) of GeTe. On the basis of a single-band model, the anomalies may be associated with changes in effective mass with state and temperature. But the authors suggest a more likely model, reflecting the complex structure of the valence band. This model consists of two subzones within the band, displaced relative to each other, and having different density states. The scheme of this model is illustrated in Fig. 1 on the Enclosure. On the basis of this model it is easy to explain quantitatively the

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